

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Brian Philip Allen et al.
Int'l Application No. : PCT/GB2003/002756
U.S. Application No. : 10/519,518
Int'l Filing Date : June 27, 2003
Title : ELECTROCHEMICAL SENSING USING AN ENZYME
ELECTRODE

Docket No. : 310134.401USPC
Date : July 18, 2005

Mail Stop PCT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents:

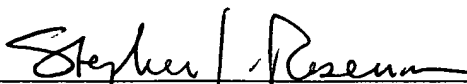
In accordance with 37 CFR 1.56 and 1.97 through 1.98, applicants wish to make known to the U.S. Patent and Trademark Office the references set forth on the attached Form PTO-1449. Copies of the cited U.S. patents and published patent applications are not required and accordingly have not been provided. Copies of all other cited references are enclosed. As to any reference cited, applicants do not admit that it is "prior art" under 35 U.S.C. §§ 102 or 103, and specifically reserve the right to traverse or antedate any such reference, as by a showing under 37 CFR 1.131 or other method. Although the aforesaid references are made known to the Patent and Trademark Office in compliance with applicants' duty to disclose all information they are aware of which is believed relevant to the examination of the above-identified application, applicants believe that their invention is patentable.

Please acknowledge receipt of this Information Disclosure Statement and kindly make the cited references of record in the above-identified application.

Applicants believe this Information Disclosure Statement has been timely filed, however, the Director is authorized to charge any fee due by way of this Information Disclosure Statement to our Deposit Account No. 19-1090.

Respectfully submitted,

Seed Intellectual Property Law Group PLLC

A handwritten signature in black ink, reading "Stephen J. Rosenman", written over a horizontal line.

Stephen J. Rosenman, Ph.D.

Registration No. 43,058

Enclosures:

Postcard

Form PTO-1449

Cited References (22)

701 Fifth Avenue, Suite 6300
Seattle, Washington 98104-7092
Phone: (206) 622-4900
Fax: (206) 682-6031

609221

FORM PTO-1449 (REV.7-80)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 310134.401USPC	APPLICATION NO. 10/519,518
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		APPLICANTS Brian Philip Allen et al.	
		INT'L FILING DATE June 27, 2003	GROUP ART UNIT

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	AA	4,595,479	06/17/86	Kimura et al.	204	294	
	AB	4,704,193	11/03/87	Bowers et al.	204	1 T	
	AC	6,492,132	12/10/02	Roberts et al.	435	25	

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	TRANSLATION	
					YES	NO
	AD	0 184 909 A2	06/18/86	EP		
	AE	2 313 912 A	12/10/97	GB		
	AF	WO 00/22158	04/20/00	WIPO		
	AG	199 57 826 C1	06/21/01	DE (+ Abstract in English)		
	AH	1 199 560 A1	04/24/02	EP (+ Abstract in English)		
	AI	2 391 945 A	02/18/04	GB		

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

	AJ	Allen, P., et al., "Surface Modifiers for the Promotion of Direct Electrochemistry of Cytochrome," <i>J. Electroanal. Chem.</i> , 178:69-86, 1984.
	AK	Chaubey, A., et al., "Mediated Biosensors," <i>Biosensors & Bioelectronics</i> , 17(6-7):441-56, June 2002.
	AL	Estabrook, R., et al., "The Use of Electrochemistry for the Synthesis of 17 Alpha-Hydroxyprogesterone by a Fusion Protein Containing P450c17," <i>Endocr Res.</i> 22(4):665-71, November 1996.
	AM	Habermüller, K., et al., "Electron-transfer Mechanisms in Amperometric Biosensors," <i>Fresenius J Anal Chem.</i> , 366(6-7):560-8, March-April 2000.
	AN	Christensen & Hamnett, <i>Techniques and Mechanisms in Electrochemistry of Cytochrome</i> , Blackwell Academic Press, London, 1994, pp. 356-373.
	AO	Heering, H., et al., "Direct Detection and Measurement of Electron Relays in a Multicentered Enzyme: Voltammetry of Electrode-Surface Films of <i>E. coli</i> Fumarate Reductase, an Iron-Sulfur Flavoprotein," <i>J. Am. Chem. Soc.</i> 119:11628-11638, 1997.

EXAMINER

DATE CONSIDERED

* EXAMINER: Initial if reference considered, whether or not criteria is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant(s).

FORM PTO-1449 (REV.7-80)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY. DOCKET NO. 310134.401USPC	APPLICATION NO. 10/519,518
INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		APPLICANTS Brian Philip Allen et al.	
		INT'L FILING DATE June 27, 2003	GROUP ART UNIT

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
BA						

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	TRANSLATION	
				YES	NO
BB					

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

BC	Iwuoha, E., et al., "Drug Metabolism Biosensors: Electrochemical Reactivities of Cytochrome P450cam Immobilised in Synthetic Vesicular Systems," <i>J. Pharm. Biomed. Anal.</i> , 17(6-7):1101-10, September 1, 1998.
BD	Joseph, S., et al., "An Amperometric Biosensor with Human CYP3A4 as a Novel Drug Screening Tool," <i>Biochem. Pharmacol.</i> , 65(11):1817-26, June 1, 2003.
BE	Kazlauskaite, J., et al., "Direct Electrochemistry of Cytochrome P450cam," <i>Chem. Commun.</i> , pp. 2189-2190, 1996.
BF	Murray, R., "Chemically Modified Electrodes," <i>Acc. Chem. Res.</i> , 13:135-141, 1980.
BG	Reipa, V., et al., "A Direct Electrode-Driven P450 Cycle for Biocatalysis," <i>Proc. Natl. Acad. Sci. USA</i> , 94:13554-13558, December 1997.
BH	Schuhmann, W., "Amperometric Enzyme Biosensors Based on Optimised Electron-transfer Pathways and Non-manual Immobilisation Procedures," <i>J Biotechnol.</i> , 82(4):425-41, February 2002.
BI	Sugihara, N., et al., "Immobilization of Cytochrome P-450 and Electrochemical Control of its Activity," <i>Polym. Adv. Technol.</i> , 9:307-313, 1998.
BJ	Vilker, V., et al., <i>Redox Chemistry and Interfacial Behaviour of Biological Molecules</i> , Plenum Press, New York, 1987, "Bacterial Cytochrome P-450 Enzymes and Reactions on Immobilized Electrodes," pp. 105-112.
BK	Vilker, V., et al., "Synthesis of Oxygenated Hydrocarbons by Cytochrome P450 Electroenzymology," <i>Electrochemical Society Proceedings</i> , 97-6:91-99, 1997.
BL	Zhang, Z., et al., "Direct Electron Injection from Electrodes to Cytochrome P450 _{cam} in Biomembrane-like Films," <i>J. Chem. Soc.</i> , 93(9):1769-1774, May 7, 1997.

EXAMINER	DATE CONSIDERED
----------	-----------------

* EXAMINER: Initial if reference considered, whether or not criteria is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant(s).